

## Foreword

ETAPS 2003 was the sixth instance of the European Joint Conferences on Theory and Practice of Software. ETAPS is an annual federated conference that was established in 1998 by combining a number of existing and new conferences. This year it comprised five conferences (FOSSACS, FASE, ESOP, CC, TACAS), 14 satellite workshops (AVIS, CMCS, COCV, FAMAS, Feyerabend, FICS, LDTA, RSKD, SC, TACoS, UniGra, USE, WITS, and WOOD), eight invited lectures (not including those that are specific to the satellite events), and several tutorials. We received a record number of submissions to the five conferences this year: over 500, making acceptance rates fall below 30% for every one of them. Congratulations to all the authors who made it to the final program! I hope that all the other authors still found a way of participating in this exciting event, and I hope you will continue submitting.

A special event was held to honor the 65th birthday of Prof. Wlad Turcki, one of the pioneers of our young science. The deaths of some of our “fathers” in the summer of 2002 – Dahl, Dijkstra and Nygaard – reminded us that Software Science and Technology is, perhaps, no longer that young. Against this sobering background, it is a treat to celebrate one of our most prominent scientists and his lifetime of achievements. It gives me particular personal pleasure that we are able to do this for Wlad during my term as chairman of ETAPS.

The events that comprise ETAPS address various aspects of the system development process, including specification, design, implementation, analysis and improvement. The languages, methodologies and tools which support these activities are all well within its scope. Different blends of theory and practice are represented, with an inclination towards theory with a practical motivation on the one hand and soundly based practice on the other. Many of the issues involved in software design apply to systems in general, including hardware systems, and the emphasis on software is not intended to be exclusive.

ETAPS is a loose confederation in which each event retains its own identity, with a separate program committee and independent proceedings. Its format is open-ended, allowing it to grow and evolve as time goes by. Contributed talks and system demonstrations are in synchronized parallel sessions, with invited lectures in plenary sessions. Two of the invited lectures are reserved for “unifying” talks on topics of interest to the whole range of ETAPS attendees. The aim of cramming all this activity into a single one-week meeting is to create a strong magnet for academic and industrial researchers working on topics within its scope, giving them the opportunity to learn about research in related areas, and thereby to foster new and existing links between work in areas that were formerly addressed in separate meetings.

ETAPS 2003 was organized by Warsaw University, Institute of Informatics, in cooperation with the Foundation for Information Technology Development, as well as:

- European Association for Theoretical Computer Science (EATCS);
- European Association for Programming Languages and Systems (EAPLS);
- European Association of Software Science and Technology (EASST);
- ACM SIGACT, SIGSOFT and SIGPLAN.

The organizing team comprised:

Mikołaj Bojańczyk, Jacek Chrzęszcz, Piotr Chrzęstowski-Wachtel, Grzegorz Grudziński, Kazimierz Grygiel, Piotr Hoffman, Janusz Jabłonowski, Mirosław Kowaluk, Marcin Kubica (publicity), Sławomir Leszczyński (www), Wojciech Moczydłowski, Damian Niwiński (satellite events), Aleksy Schubert, Hanna Sokolowska, Piotr Stańczyk, Krzysztof Szafran, Marcin Szczuka, Łukasz Sznuć, Andrzej Tarlecki (co-chair), Jerzy Tiuryn, Jerzy Tyszkiewicz (book exhibition), Paweł Urzyczyn (co-chair), Daria Walukiewicz-Chrzęszcz, Artur Zawłocki.

ETAPS 2003 received support from:<sup>1</sup>

- Warsaw University
- European Commission, High-Level Scientific Conferences and Information Society Technologies
- US Navy Office of Naval Research International Field Office,
- European Office of Aerospace Research and Development, US Air Force
- Microsoft Research

Overall planning for ETAPS conferences is the responsibility of its Steering Committee, whose current membership is:

Egidio Astesiano (Genoa), Pierpaolo Degano (Pisa), Hartmut Ehrig (Berlin), José Fiadeiro (Leicester), Marie-Claude Gaudel (Paris), Evelyn Duesterwald (IBM), Hubert Garavel (Grenoble), Andy Gordon (Microsoft Research, Cambridge), Roberto Gorrieri (Bologna), Susanne Graf (Grenoble), Görel Hedin (Lund), Nigel Horspool (Victoria), Kurt Jensen (Aarhus), Paul Klint (Amsterdam), Tiziana Margaria (Dortmund), Ugo Montanari (Pisa), Mogens Nielsen (Aarhus), Hanne Riis Nielson (Copenhagen), Fernando Orejas (Barcelona), Mauro Pezzè (Milano), Andreas Podelski (Saarbrücken), Don Sannella (Edinburgh), David Schmidt (Kansas), Bernhard Steffen (Dortmund), Andrzej Tarlecki (Warsaw), Igor Walukiewicz (Bordeaux), Herbert Weber (Berlin).

I would like to express my sincere gratitude to all of these people and organizations, the program committee chairs and PC members of the ETAPS conferences, the organizers of the satellite events, the speakers themselves, and Springer-Verlag for agreeing to publish the ETAPS proceedings. The final votes of thanks must go, however, to Andrzej Tarlecki and Paweł Urzyczyn. They accepted the risk of organizing what is the first edition of ETAPS in Eastern Europe, at a time of economic uncertainty, but with great courage and determination. They deserve our greatest applause.

Leicester, January 2003

José Luiz Fiadeiro  
ETAPS Steering Committee Chair

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<sup>1</sup> The contents of this volume do not necessarily reflect the positions or the policies of these organizations and no official endorsement should be inferred.

# Preface

The conference on Fundamental Approaches to Software Engineering (FASE) aims at presenting novel results and discussing new trends in both theories for supporting software engineering and experiences of application of theories for improving software engineering practice.

This year, the conference focused on large-scale information and communication infrastructures evolving in time and functionalities and with stringent quality constraints. The international community answered enthusiastically with a record of 89 high-quality submissions in many key areas, covering both traditional and emerging technologies: software components and architectures, mobile computing, aspect programming, object-oriented programming, distributed and web computing, model integration, software measurements, analysis, and testing. Contributions were submitted from 27 different countries, covering Europe (Italy, Germany, United Kingdom, France, Belgium, Spain, Portugal, Poland, Austria, Cyprus, Finland, Ireland, Luxemburg, Norway, Russia, and Sweden), America (United States, Canada, Brazil, Argentina, and Chile), Asia (Korea, Japan, India, China, Jordan), and Australia.

Each submission was reviewed by three independent reviewers. The quality was high, the competition was strong, and the Program Committee worked hard to select only the top-quality submissions, allowing time for the other authors to assess the results that we hope to see presented soon to our community. The resulting program included 26 papers and was introduced by a keynote address from Michal Young.

We would like to thank all authors who submitted their work for presentation at FASE. Without their excellent contributions, the work of the Program Committee would have been tedious and we would not have been able to prepare such a great program. We express our gratitude to the Organizing and Steering Committees, who gave us excellent support. A special thanks to the members of the Program Committee and the many reviewers who supported a smooth and exciting reviewing process.

Milan, January 2003

Mauro Pezzé

# Organization

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